

## **CRAMBIDAE ASSOCIATED WITH PARKS AND ORNAMENTAL GARDENS OF BUCHAREST**

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### **Abstract**

*The study presents two species of defoliating insects found in parks and ornamental gardens. These species are less known in our country and belong to Crambidae family. The study shows: the mode of attack, the unaesthetic appearance of the attacked plants in the landscape, the possibilities and difficulties to control these species of insects. The larvae of *Cydalima perspectalis* Walker are voracious and consume the leaves of *Buxus* plants. The larvae of *Palpita vitrealis* Rossi attack in groups *Ligustrum* plants until they defoliate them. Both species affect the decorative value of the plants up to their elimination from the landscape.*

**Key words:** defoliating insects, parks, ornamental gardens, attack, control

### **INTRODUCTION**

Trees, flowers and plants' pests produce considerable damages by decreasing the plants' ornamental value and also by changing the urban areas' microclimate. The climate changes throughout the last years, excessive drought and also heavy rain, the great amount of imported plants and flowers as a result of the urban areas surfaces' growth favored pests from parks and ornamental gardens and their aggressiveness' growth by enlarging the host plants' circle.

The present project's purpose is to analyze the impact of two defoliating *Crambidae* species (less known in our country) upon some plants' species frequently encountered in parks and ornamental gardens from urban areas and these pests' destruction methods starting from pest control difficulties.

### **MATERIALS AND METHODS**

Following visual observation done in parks and green areas throughout Bucharest, during 2010-2013 two species of lepidoptera were spotted. They are less known in our country: plants' moth of *Buxus* (*Cydalima perspectalis* Walker) on *Buxus sempervirens* and green olives' moth (*Palpita vitrealis* Rossi) on dog wood plants (*Lygustrum vulgare*). Samples were taken from the attacked plants and

Lepidoptera species' larvae were also taken, in order to grow them in laboratory conditions. On species' level, the laboratory obtained adults were identified using the morphological criteria (wing, genital part). Also, in the case of the two Lepidoptera species, photos were taken concerning their attack method and concerning their development stages.

### **RESULTS AND DISCUSSIONS**

*Cydalima (Diaphania) perspectalis* Walker (1859) is a Lepidoptera species belonging to the *Crambidae* family, native from East Asia (Korycinska and Eyre, 2011). In Europe, moth was for the first time signaled in Germany in 2007. In 2010 it was present in Switzerland, Austria, Great Britain and Liechtenstein. In 2011 it was also signaled in Belgium and Hungary (Szekely et al., 2011). In Bucharest in 2010 it was signaled by Maria Iamandei, and in 2011 by Levente Szekely and his colleagues signal it in the north-eastern part of Bucharest.

It has been observed by us on *Buxus sempervirens* plants, in the north of Bucharest, in a private garden in the summer of 2010. In the spring of 2012 (april - may) young larvae were collected and bred in captivity, obtaining determined adults. In 2013, this moth was seen on a *Buxus* green fence from Herăstrău park, near a children's playground zone (Figure 1).



Figure 1. *Buxus* green fence attacked by *Cydalima perspectalis*, situated near children playground area

Data regarding this species' biology are not entirely clear for our country. Based on their laboratory growth and development, we present a few morphological features for the following stages: larva, youngster and adult. On apparition, the larva has a yellow-greenish color with a black head. The mature larvae (Figure 2) it has a green body, with white and black stripes and big black dots all along its body. Its body length is approximately 4 cm.



Figure 2. *Cydalima perspectalis* – larvae

The pupae (Figure 3) has a 1,5 – 2 cm length. On apparition it is green, with black stripes on the back side, and when it becomes an adult it is brownish, hidden inside a white cocoon, among leaves and young branches.



Figure 3. *Cydalima perspectalis* – pupae

The adult (Figure 4) is medium-sized, with its wings of 4 – 4,5 cm. The body is white with a black head and the lower belly part is brown. The wings have brown edges and a large white surface. The front wings have a white extension in the brown edge, situated in the middle. The brown areas have golden reflexes, and the white ones violet reflexes.



Figure 4. *Cydalima perspectalis* – adult

Larves are greedy and consume the *Buxus* plant's leaves. On apparition they chew the lower part of the plant's skin and the middle part, leaving the upper part of the leaf untouched. Later on, the plants are completely stripped, while among the young plants numerous silk threads and green-black excrements can be seen. On the soil, under the plants, small remains of plants and green excrements can be noticed (Figure 5). The plants are damaged and their ornamental value is totally compromised (Figure 6). Also, the plants' growth and development processes are slowed down, especially since it is a known fact that *Buxus* species has a relatively slow growth.

An important aspect which needs to be given special attention is the fact that this moth can become an invasive species in parks and ornamental gardens from urban areas (decorated in a landscape type in green fences or isolated plants with *Buxus* genre species. At the same time, it can become a serious enemy for seed beds.



Figure 5. Chopped leaves and excrements under attacked plants

Pest control regarding this particular species is less known. Professional literature indicates laboratory testing with biological products such as: the baculovirus *Anagrapha falcifera* (Rose et al., 2013), entomopathogen bacteria *Bacillus thuringiensis* var. *kurstaki* ([www.neozen.ch](http://www.neozen.ch)) or *Steinernema carpocapsae*.



Figure 6. Green fence of *Buxus* attacked in different stages

For seed beds piretroid products, based on deltametrin or cipermetrin are recommended; also, it is a good idea to use metamorphosis inhibitors such as diflubenzuron, but we have to mention it must be applied to young larvae, before the silky threads appear.

In private gardens and on smaller isolated plants a mechanic combat can be done, by gathering and destroying the larvae or physically, by cutting and burning the ones which have been severely damaged. Also, home and gardening chemical products can be used.

Defeating this pest is tougher as the import and export of *Buxus* plants is free, favoring the spread and establishing of this species in new zones. On top of this the lack of natural enemies is added, such as: birds. The host plant has a high level of toxicity, and host plants can be encountered near playgrounds etc.

*Palpita vitrealis* Rossi is a *Crambidae* family moth, spread all over the world. It was signaled in south Europe, but it was also seen in north. In our country it was spotted in Banat, Crişana, Transilvania, Moldova and Dobrogea (Rákosy et al., 2003) under the *Palpita unionalis* name (Hübner, 1796) without notations regarding host plant or attack method. In 2011 Levente Szekely mentions it to be more frequent in southern Romania. The observations elaborated by us show it present in Bucharest in 2013 on a green fence of *Lygustrum vulgare*. The images regarding this moth attack method lead us to more than its simple signaling in Bucharest. The larva is light-green, a little bit yellowish throughout the first stages, afterwards green with a yellow-brown head (Figure 7).



Figure 7. Older larve

On apparition they feed on the lower skin and on the middle part (Figure 8), and later on they chew the highest plant part (Figure 9). The attack is manifested in such a way that they plants are totally stripped (Figure 10).



Figure 8. The larvae attack in the first stages



Figure 9. Total and irregular chew of the leaf



Figure 10. Larvae attack group

They create something similar to a spider web before starting to develop themselves on the host plant. On the plants and at their base we can notice black excrements.

The attacked plants are damaged and they dry off (Figure 11).



Figure 11. Dried branches after attack

The pupae pest is at first green, then it becomes brown (Figure 12). The development is done in silky threads, among the attacked leaves. The adult (Figure 13) has shiny transparent wings. The front wings have a brown-red edge and two black dots in the middle. The wings' size is of 27 – 31 mm. Standing still, they have a triangle shape.



Figure 12. *Palpita vitrealis* – pupae



Figure 13. *Palpita vitrealis* – adult

Defeating ornamental plants' pests from urban areas has a specific domain, because there are difficulties regarding: host plants' place (parks, public zones, playgrounds, rest places, isolated

plants, private gardens), lack of reduced toxicity products or lack of biological products and lack of chemical products for parks and ornamental gardens.

## CONCLUSIONS

The two *Crambidae* species present in parks from Bucharest can generate major damages to host plants signaled, the number of *Buxus* and *Lygustrum* in landscape areas being quite large. These species can become invasive in parks and ornamental gardens from Bucharest.

At the present time there are no appropriate plant protection products for pest control from parks and public ornamental gardens.

In private gardens chemical control measures can be taken.

In public areas (parks, playgrounds) chemical pest control cannot be applied.

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